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EXAMINER

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Paper No. 23

Application Number: 09/163,259
Filing Date: 9/29/98
Appellant(s): Frank W. Adams, et al.

Randy G. Henley
For Appellant

EXAMINER'S ANSWER

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This is in response to appellant's brief on appeal filed 10/15/2001.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

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(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

The appellant has stated that claims 1-6, 8 and 19 stand or fall together.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

EP0710618	Aulanko et al	5/8/1996
1035230	Pearson	8/13/1912
4664230	Olsen	5/12/1987

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(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aulanko et al (EP0710618) in view of Pearson (1035230).

Aulanko et al disclose a hoistway (col. 2, lines 58-9) with walls (col. 3, lines 50-55); an elevator car 1; a counterweight 2; a drive motor 6 between the elevator car and side wall which couples the car and counterweight via the rope 3. Aulanko et al do not disclose a flat drive and suspension rope. Pearson discloses a flat drive and suspension rope 12. It would have been obvious to one of ordinary skill in the art to modify the apparatus of Aulanko et al by using flat rope of Pearson in order to produce a large friction surface.

3. Claims 2-6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aulanko et al in view of Pearson as applied to claim 1 above, and further in view of Olsen.

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In addition to all elements of claim 1, Aulanko et al in view of Pearson discloses first and second columns 11, 11a; and a support member between them 20. Aulanko et al in view of Gale do not disclose that the columns are on opposite side of the hoistway. Olsen disclose columns 28 on opposite sides of the hoistway. It would have been obvious to one of ordinary skill in the art to further modify the columns of Aulanko et al by moving them to opposite sides of the shaft as taught by Olsen in order to facilitate use of the columns for guide both the elevator car and counterweight, thereby providing a more compact structure and saving on the cost of the extra beam required by Aulanko et al.

As to claim 3, Aulanko et al disclose a counterweight 2 below the drive sheave 7 and between the car 1 and the wall.

As to claims 4 and 5, Aulanko et al disclose counterweight sheave 9 on top of the counterweight and two elevator sheaves 4 under the elevator, the elevator rope having both ends 13, 14 terminated in the top portion of the hoistway, the rope extending down from the first end 13, looping the counterweight sheave, going up and looping the drive sheave 7, going down under the car and looping each car sheave and terminating at the second end 14.

As to claim 6, Aulanko et al disclose the first end 13 terminated to the support member 20 (see Fig. 1).

As to claim 8, Olsen discloses that the first and second columns have first and second vertical guide members 36 corresponding to the path of the elevator; and that the elevator has opposing surfaces 35 shaped to be moveably engageable with the elevator guide surfaces.

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(11) Response to Argument

Whether the Examiner has met his burden to establish a prima facie case of obviousness under 35 USC 103 in the rejection of Claims 1 and 19 as unpatentable over Aulanko et al. in view of Pearson?

The requirements to establish a *prima facie* case of obviousness are: that there must be some suggestion or motivation for combining the references; that there must be a reasonable expectation of success; and that the combination must teach all of the elements of the claim (MPEP 2142). The combination of Aulanko et al in view of Pearson fulfill all three requirements.

First, all elements of the claim are disclosed in the combination. As discussed in the rejection, Aulanko et al show all elements of the claim except a flat rope. Pearson shows the use of a flat rope 12 comprising a thin steel strap. *Webster's Collegiate Dictionary, 5th Ed.* defines a rope as "a long slender strip of material used as a rope" and the applicant has acknowledged this definition in terming the rope of Pearson a "flat rope" (page 3, line 22; page 4, line 11 of applicant's appeal brief). Since all elements, including a flat rope, are shown, this requirement is fulfilled.

Second, a motivation is provided to combine the references. While the applicant argues that no motivation exists to combine Aulanko et al and Pearson (page 4, line 4 of

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Appeal Brief), the motivation of providing a large friction surface is explicitly stated in Pearson. Pearson states, "Flat metallic strips of suitable thinness to be flexible present a broad friction surface to a cylindrically faced driving sheave, and a great tractive effect is obtained". The applicant further argues with respect to Aulanko et al that no additional friction surface would be desirable and suggests that too much friction could be detrimental. While "too much" friction, by definition is undesirable, it is possible to configure a system so as to have too much friction using either a flat or a standard wire rope. The application of engineering judgment in in either case ensures that the proper amount of friction is applied. Further, the rope of Pearson gives the designer additional design flexibility due to the availability of a large friction surface.

Also with respect to motivation, modifying Aulanko et al by adding the flat rope of Pearson does not render Aulanko et al unsatisfactory for its intended purpose. The applicant argues that combining Aulanko et al with Pearson would destroy the purpose of Aulanko et al. Applicant states that the purpose of Aulanko et al is to save space and refers to column 1, line 49 to column 2, line 26 of Aulanko et al's specification to support this statement. Column 2, lines 10-21 state that "The traction sheave elevator of the invention allows an obvious space saving to be achieved because no separate machine room is needed. The invention allows efficient utilization of the cross-sectional area of the elevator shaft. There is room for other elevation equipment beside the machinery." In this context, it can be seen that the modification of Aulanko et al to use flat ropes does not destroy the invention. At worst, the

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sheave may be somewhat axially larger, but an examination of Figure 1 shows that the overall structure would remain unchanged. The space saving advantages of having no machine room, efficient use of the cross-sectional area of the shaft, and the mounting of other equipment next to the machinery are still viable. Since an explicit teaching is provided in the Pearson for combining the references, and combining the references can be accomplished without destroying Aulanko et al's intended purpose, the motivation requirement has been met.

Third, there is a reasonable expectation of success that the combination will work. Both Aulanko et al and Pearson show similar inventions -- elevators supported and driven by a rope with a sheave. The level of predictability associated with a simple hoisting arrangement are high. Further, it is noted that the applicant does not argue that the combination does not have a reasonable expectation of success.

Finally, the applicant presents a number of arguments discussed below claiming that use of steel straps in elevator systems is "impractical, unsafe, and inoperable" (page 7, line 7 of Appeal Brief). However, Pearson shows that the use of the flat strap is practical, safe and operable and no assertion has been made that the reference is inoperable. While the arguments rebutted below may show why a multistrand wire rope is advantageous over the flat strap of Pearson in some circumstances, but they do not succeed in showing that the combination of Aulanko et al in view of Pearson lacks motivation or that it lacks a reasonable expectation of success. It is noted that the requirement that the rope be a multistrand wire rope is not claimed

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in the present application and that the use of the flat rope of Pearson in combination with Aulanko et al is a functional combination.

Applicant argues that the use of the flat rope of Pearson is disadvantageous because the strap has a greater modulus of elasticity and requiring a larger sheave and a motor with more torque. While a larger sheave and higher torque motor may be required, the applicant makes no suggestion that this destroys the functionality of the combination. It simply states that a multistrand wire rope would provide advantages. Further, the use of the suggested multistrand wire rope has offsetting disadvantages, such as the requirement for a high speed motor, since the smaller sheave must turn more quickly to maintain the same speed.

Next, the applicant argues that multistrand wire ropes are more advantageous than a steel strap because because the strap provides less redundancy since a crack would propagate through it. However, the applicant does not argue that this destroys the functionality of the combination. It is noted that this problem is solved by the use of multiple flat ropes (as shown in Pearson) which is a common practice in the elevator art regardless of the type of rope used.

Next, the applicant argues that multistrand wire ropes are more advantageous than a steel strap because the steel strap does not allow for helical wrapping around a sheave. However, the applicant does not argue that this destroys the functionality of the combination, and such a wrapping is not disclosed or claimed in either the present application or in Aulanko et al. It is further noted that such wrapping may not be required since Pearson discloses the ability to gain a great tractive force without wrapping.

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Next, the applicant argues that multistrand wire ropes are more advantageous than a steel strap because liquid lubrication of the rope to avoid rust is not possible. However, the applicant does not argue that this destroys the functionality of the combination, and the use of such liquid lubricants is not disclosed or claimed in either the present application or in Aulanko et al. It is further noted that a solid coating, such as a primer or other coating, could be used to avoid rust.

Next, the applicant argues that multistrand wire ropes are more advantageous than a steel strap because a flat strap is more prone to slippage due to contamination. However, the applicant does not argue that this destroys the functionality of the combination. It is noted that Pearson discloses the use of a leather facing on the sheave, which would allow small particles to recess into the leather under the force of the flat strap and thereby allow contact between the strap and the sheave and provide better traction when moisture is present. It is further noted that a standard wire rope, if allowed to become sufficiently fouled, faces similar problems. In any case maintenance of the system and the elevator shaft are required.

It has been shown that there is a suggestion or motivation for combining the references; that there is a reasonable expectation of success; and that the combination teaches all of the elements of the claim. Therefore, a *prima facie* case of obviousness has been shown.

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Whether the Examiner has met his burden to establish a prima facie case of obviousness under 35 U.S.C. 103 in the rejection of Claims 2-6 and 8 as unpatentable over Aulanko et al. in view of Pearson, and further in view of Olsen

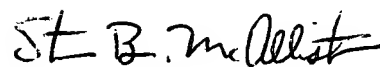
The applicant argues that impermissible hindsight was used in modifying the apparatus of Aulanko et al in view of Pearson by adding the elevator guiding system of Olsen and that there is no motivation for the combination. As discussed in the rejection, Aulanko et al show two guide rails 11, 11a between the car and the elevator shaft with a support member on top. These rails already guide the counterweight. Olsen clearly teaches moving set of guide rails to opposite sides of the elevator shaft and configuring them to guide the elevator as well as the counterweight. The motivation stated in the rejection for changing the configuration is "to facilitate use of the columns to guide both the elevator car and counterweight, thereby providing a more compact structure and saving on the cost of the extra beam required by Aulanko et al." This motivation is supported by the following statements in Olsen: "the entire structure is designed for economical installation and operation" (abstract, lines 10-12); and "the entire weight of the system is carried on the selected wall supports . The manner of attachment, to be explained in the detailed section hereafter, enables the installer to work in the close confines of the elevator shaft". Further, it is a well known engineering goal to minimize cost in a design and the motivation of saving money by eliminating a part is well within the skill of one of ordinary skill in the art.


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It is noted that the applicant has not alleged that any elements of the claim are not shown, or that the combination does not have a reasonable expectation of success. With respect to motivation, it has been shown that motivation exists for the combination and that all elements of have been satisfied for a *prima facie* case of obviousness.

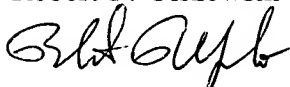
For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,


Steven B. McAllister
December 17, 2001

 12/17/01
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